

REMARKS

The pending claims have all been rejected on the basis of a new combination of references. Specifically, claims 1 and 4-15 have all been rejected under 35 USC 103 on the basis of Lin (US 5,200,362) in combination with Ogawa (US5,252,855). These rejections are respectfully traversed.

Lin does not disclose a lead frame

All of the claims in the present application are specifically directed at lead frame based methods of packaging integrated circuits. Although the exact wording of the claims vary somewhat, each independent claim specifically requires the step of: (1) "providing" or "forming" a lead frame; and (2) mounting the lead frame on an adhesive strip. In the outstanding rejection, it is asserted that Lin discloses the step of "forming a flat lead frame 13 including ...". This assertion is respectfully traversed. The Lin reference contemplates the adhesion of a conductive foil or the deposition of a conductor material onto a flexible "transfer film". See the paragraph beginning on at Col. 2, line 33 of the Lin patent. Although lead frames are formed from relatively thin sheets of metal (e.g., copper), they are NOT foils and are not the thin sheets of metal that are discussed in the '362 patent. It is respectfully submitted that the significant distinctions between the foil based technologies discussed by Lin and the lead frame technology of the present invention are widely understood to those skilled in the art and that such people would understand the term lead frame to exclude thin metal foils/sheets/deposited conductive layers, that are disclosed by Lin.

As the Examiner is no doubt aware, lead frames are widely used within the semiconductor packaging industry. There is a large installed base of equipment suitable for handling lead frames. In contrast, foil or taped based processes (which are also generally known within the industry) are generally significantly more expensive than lead frame based processes. Accordingly, it is not surprising that they are far less widely used than lead frame based packaging. The equipment used for handling tapes and foils during assembly is generally very different than the equipment used for handling lead frames. Therefore, it should be appreciated that a very significant advantage of the present invention is that the described devices can be fabricated using an inexpensive technology (i.e., lead frames) that is quite familiar to many people in the art using much of their existing equipment. Given the significant differences between lead frame based packaging and the foil / thin film approach described by Lin, it is respectfully submitted that nothing in the Lin reference would suggest the use of the claimed lead frame based process.

It is appreciated that the secondary reference to Ogawa discloses a particular lead frame construction. However, it is respectfully submitted that nothing in either of the references would motivate a person of ordinary skill in the art to utilize a lead frame in the process described by Lin.

It is noted that the outstanding rejection also relies on the reverse combination where Ogawa is considered the primary reference. However for substantially the same reasons as articulated above, it is respectfully submitted that nothing in either the Ogawa or Lin references would motivate a person of ordinary skill in the art to package the lead frame disclosed by Ogawa in the claimed process.

In view of the foregoing, it is respectfully submitted that the pending claims are not rendered obvious by any reasonable combination of the Ogawa and Lin references and that accordingly, the pending rejections should be withdrawn for at least this reason.

The Dependent Claims

Claims 4- 6, 11 and 13 each depend either directly or indirectly from independent claim 1. Claims 8 - 10, 12 and 14 each depend either directly or indirectly from independent claim 7. Accordingly, these dependent claims are respectfully submitted to be patentable over the art of record for at least the reasons set forth above. Additionally, some of these dependent claims require additional elements that when considered in the context of the claimed arrangements further patentably distinguish the art of record.

Conclusion

In view of the foregoing, it is respectfully submitted that all pending claims are patentable over the art of record and that this case is in condition for allowance. Should the Examiner have any remaining concerns regarding the present application, he is encouraged to contact the undersigned at the telephone number set out below.

Respectfully submitted,
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